

REMARKS

Applicant thanks the Examiner for the thorough consideration given the present application.

Claims 1, 2, 4, 5, and 7-12 are pending in this application. Claims 1 and 4 are independent. Claims 1 and 4 are amended.

Reconsideration of this application, as amended, is respectfully requested.

Drawings

The drawings are objected to because the limitation recited in claim 1 of "depositing a conductive layer on a substrate" is not depicted. In response, claim 1 is amended to specifically recite "depositing a nitride film and an oxide film over a substrate, the oxide film being deposited on the nitride film by chemical vapor deposition". This feature is illustrated in FIG. 2C. Withdrawal of the objection to the drawings and approval of the revised formal drawings filed September 19, 2002, are, therefore, respectfully requested.

Rejection under 35 U.S.C. § 103(a)

Claims 1-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Applicant's disclosed related art in view of U.S. Patent No. 6,372,150 to Wong et al. This rejection is respectfully traversed.

While not conceding the appropriateness of the rejection, but merely to advance prosecution of the instant application, independent claims 1 and 4 are amended to recite combinations of steps in a method for fabricating a capacitor of a semiconductor device including depositing a nitride film and an oxide film over a substrate, the oxide film being deposited on the nitride film by chemical vapor deposition, and sequentially etching the oxide film and the nitride film using a patterned photoresist as a mask.

It is respectfully submitted that the combinations of steps set forth in amended independent claims 1 and 4 are not disclosed or made obvious by the prior art of record, including Applicant's related art and Wong et al.

Applicant's related art merely shows depositing a nitride film 13 on an entire surface including a contact plug 12 and depositing an oxide film 14 on the nitride film 13. Furthermore, the oxide film 14 and the nitride film 13 are sequentially etched by a photolithography process to expose the contact plug 12 and the insulating film 11. See FIG. 1B. However, Applicant's related art does not teach or suggest depositing a nitride film and an oxide film over a substrate, the oxide film being deposited on the nitride film by chemical vapor deposition, and sequentially etching the oxide film and the nitride film using a patterned photoresist as a mask

The Office Action relies on Wong et al. for a teaching of a water-vapor plasma etching of metal surfaces covered with an organic material, such as a

photoresist. However, Wong et al. does not teach or suggest the above-cited limitation of claims 1 and 4 and, therefore, fails to cure the deficiencies of Applicant's related art.

In view of the foregoing, reconsideration and withdrawal of the rejection of claims 1 and 4 are respectfully requested. Independent claims 1 and 4 are believed to be in condition for allowance. With regard to the dependent claims, these claims depend directly or indirectly from allowable independent claims 1 and 4 and are, therefore, allowable for at least the same reasons as above, as well as for the additional limitations provided by these claims. Accordingly, all claims should be allowable.

Independent claims 11 and 14 are added to recite additional aspects of the present invention. Applicant respectfully submits that claims 11 and 12 are allowable for the same reasons discussed with respect to claims 1 and 4, respectively, above.

Conclusion

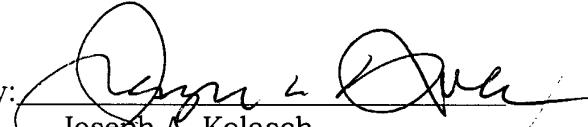
The stated grounds of rejection has been properly traversed, accommodated, or rendered moot. Applicant, therefore, respectfully requests that the Examiner reconsider the presently outstanding rejection and that it be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

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However, if there are any outstanding issues, the Examiner is invited to telephone Sam Bhattacharya (Reg. No. 48,107) at 703-205-8000 in an effort to expedite prosecution.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,
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465-758P
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MARKED-UP COPY OF AMENDED CLAIMS

IN THE CLAIMS:

Please **amend claims 1 and 4** as follows:

1. (Amended) A method for fabricating a capacitor of a semiconductor device comprising:

depositing a nitride film and an oxide film over a substrate, the oxide film being deposited over the nitride film by chemical vapor deposition;

sequentially etching the oxide film and the nitride film using a pattern photoresist as a mask;

depositing a conductive layer over [a] the substrate;
forming a photoresist pattern on the conductive layer;
etching the conductive layer using the photoresist pattern as a mask to form a lower electrode;

removing the photoresist using an etching gas that is non-reactive with respect to the lower electrode, wherein the etching gas is one of H₂O, a mixture of H₂ and O₂ in which an amount of H₂ is smaller than an amount of O₂, a mixture H₂O, NH₃, and N₂, a mixture of N₂ and NH₃, a mixture of NH₃ and H₂O, and a mixture of N₂ and H₂O; and

forming a dielectric film and an upper electrode on a surface of the lower electrode.

4. (Amended) A method for fabricating a capacitor of a semiconductor device comprising:

depositing a nitride film and an oxide film over a semiconductor substrate, the oxide film being deposited over the nitride film by chemical vapor deposition;

sequentially etching the oxide film and the nitride film using a patterned photoresist as a mask;

forming a conductive region on [a] the semiconductor substrate;

forming an interleaving insulating film having a contact hole therein over the conductive region;

forming a contact plug within the contact hole;

forming insulating film patterns on the interleaving insulating film to expose the contact plug and the interleaving insulating film adjacent to the contact plug;

depositing a barrier film and a first conductive layer on the contact plug and the insulating film patterns;

forming a photoresist over the contact plug between the insulating film patterns;

sequentially removing the first conductive layer and the barrier film on the insulating film patterns using the photoresist as a mask, thereby forming a lower electrode and a barrier film in a U-shape in cross-section;

removing the photoresist using an etching gas that is non-reactive with respect to the lower electrode, wherein the etching gas is one of H₂O, a mixture of H₂ and O₂ in which an amount of H₂ is smaller than an amount of O₂, a mixture H₂O, NH₃, and N₂, a mixture of N₂ and NH₃, a mixture of NH₃ and H₂O, and a mixture of N₂ and H₂O;

removing the insulating film patterns; and sequentially forming a dielectric film and an upper electrode on the lower electrode and the barrier film.

CLAIMS 11 AND 12 ARE ADDED.